

Notice of Allowability

Application No.

10/646,601

Examiner

Mohammad A. Siddiqi

Applicant(s)

LO ET AL.

Art Unit

2154

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/26/2007.
2. ☒ The allowed claim(s) is/are 1-14, 45-58 and 89-113.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

NATHAN FLYNN
SUPERVISORY PATENT EXAMINER

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date See Continuation Sheet
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Continuation of Attachment(s) 3. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 12/16/2004,
08/21/2003, 04/12/2004.

DETAILED ACTION

1. Claims 1-14, 45-58, and 89-113 are allowed.
2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael D. Wiggins on 09/28/2007.

Please replace the claims as attached.

~~Proposed Claim Amendments~~

In the claim^s:

1. (Currently Amended) A network device, comprising:

a media access control (MAC) device that transmits a first data stream at a first data rate that includes symbols having M bits;

a translator that converts said first data stream to a second data stream at a second data rate, wherein said translator includes:

a data appender that appends N bits to said symbols in said first data stream to generate second symbols having M+N bits; and

a data duplicator that duplicates said second symbols X times to produce said second data stream at said second data rate, wherein said second data rate is equal to a product of said first data rate and $\left(1 + \frac{N}{M}\right) \cdot X$, wherein N, M, and X are integers greater than one.
2. (Original) The network device of claim 1 further comprising a first physical coding sublayer (PCS) device that communicates with said translator and that codes said second data stream received from said translator to produce a third data stream at a third data rate.
3. (Original) The network device of claim 2 further comprising a first serializer/deserializer (SERDES) that receives said third data stream from said first PCS device.

4. (Original) The network device of claim 1 wherein said first data rate is 100 Mb/s, $N = 4$, $M=4$, $X=5$ and said second data rate is 1000 Mb/s.

5. (Original) The network device of claim 1 wherein said first data rate is 10 Mb/s, $N = 4$, $M=4$, $X=50$ and said second data rate is 1000 Mb/s.

6. (Original) The network device of claim 3 further comprising:
a second SERDES that communicates with said first SERDES; and
a second PCS device that communicates with said second SERDES, that decodes said third data stream at said third data rate and that outputs said second data stream at said second data rate.

7. (Original) The network device of claim 6 further comprising a data sampler that selects one of X data symbols that are received from said second PCS, wherein said one of said X data symbols include $(M+N)$ bits.

8. (Original) The network device of claim 7 further comprising a data remover that removes N of said $(M+N)$ bits and that outputs symbols with said M bits at said first data rate.

9. (Original) The network device of claim 8 further comprising a physical layer (PHY) device that receives said M bits at said first data rate.

10. (Original) The network device of claim 9 wherein said first data rate is 100 Mb/s, $N = 4$, $M=4$, $X=5$ and said second data rate is 1000 Mb/s.

11. (Original) The network device of claim 9 wherein said first data rate is 10 Mb/s, $N = 4$, $M=4$, $X=50$ and said second data rate is 1000 Mb/s.

12. (Original) The network device of claim 9 wherein said PHY device performs mode auto detection and switches between a first serial gigabit interface mode and a second serial gigabit interface mode.

13. (Original) The network device of claim 6 wherein said first PCS device performs 8/10 bit encoding and said second PCS device performs 8/10 bit decoding.

14. (Original) The network device of claim 1 wherein said MAC device is implemented in one of a switch and a router.

Claims 15-44 (Cancelled).

45. (Currently Amended) A network device, comprising:
media access control (MAC) means for transmitting a first data stream at a first data rate that includes symbols having M bits;
translating means for converting said first data stream to a second data stream at a second data rate, wherein said translating means includes:

data appending means for appending N bits to said symbols in said first data stream to generate second symbols having M+N bits; and

data duplicating means for duplicating said second symbols X times to produce said second data stream at said second data rate, wherein said second data rate is equal to a product of said first data rate and $\left(1 + \frac{N}{M}\right) \cdot X$, wherein N, M, and X are integers greater than one.

46. (Original) The network device of claim 45 further comprising first physical coding sublayer (PCS) means that communicates with said translating means for coding said second data stream received from said translating means to produce a third data stream at a third data rate.

47. (Original) The network device of claim 46 further comprising first serializer/deserializer (SERDES) means for receiving third data stream from said first PCS means and for serially transmitting said third data stream.

48. (Original) The network device of claim 45 wherein said first data rate is 100 Mb/s, N = 4, M=4, X=5 and said second data rate is 1000 Mb/s.

49. (Original) The network device of claim 45 wherein said first data rate is 10 Mb/s, N = 4, M=4, X=50 and said second data rate is 1000 Mb/s.

50. (Original) The network device of claim 47 further comprising:

second SERDES means for serially transmitting and receiving data and for communicating with said first SERDES means; and

second PCS means that communicates with said second SERDES for decoding said third data stream at said third data rate and for outputting said second data stream at said second data rate.

51. (Original) The network device of claim 50 further comprising data sampling means for selecting one of X data symbols that are received from said second PCS, wherein said one of said X data symbols include $(M+N)$ bits.

52. (Original) The network device of claim 51 further comprising data removing means for removing N of said $(M+N)$ bits and for outputting symbols with said M bits at said first data rate.

53. (Original) The network device of claim 52 further comprising physical layer (PHY) means for receiving said M bits at said first data rate.

54. (Original) The network device of claim 53 wherein said first data rate is 100 Mb/s, $N = 4$, $M=4$, $X=5$ and said second data rate is 1000 Mb/s.

55. (Original) The network device of claim 53 wherein said first data rate is 10 Mb/s, $N = 4$, $M=4$, $X=50$ and said second data rate is 1000 Mb/s.

56. (Original) The network device of claim 53 wherein said PHY means performs mode auto detection and switches between a first serial gigabit interface mode and a second serial gigabit interface mode.

57. (Original) The network device of claim 50 wherein said first PCS means performs 8/10 bit encoding and said second PCS means performs 8/10 bit decoding.

58. (Original) The network device of claim 45 wherein said MAC means is implemented in one of a switch and a router.

Claims 59-88 (Cancelled).

89. (Currently Amended) A method for operating a network device, comprising:

transmitting a first data stream at a first data rate that includes symbols having M bits; and

converting said first data stream to a second data stream at a second data rate by:

appending N bits to said symbols in said first data stream to generate second symbols having M+N bits; and

duplicating said second symbols X times to produce said second data stream at said second data rate, wherein said second data rate is equal to a product of said first data rate and $\left(1 + \frac{N}{M}\right) \cdot X$, wherein N, M, and X are integers greater than one.

90. (Original) The method of claim 89 further comprising coding said second data stream received from said translating means to produce a third data stream at a third data rate.

91. (Original) The method of claim 90 further comprising receiving third data stream from said first PCS means and serially transmitting said third data stream.

92. (Original) The method of claim 89 wherein said first data rate is 100 Mb/s, $N = 4$, $M=4$, $X=5$ and said second data rate is 1000 Mb/s.

93. (Original) The method of claim 89 wherein said first data rate is 10 Mb/s, $N = 4$, $M=4$, $X=50$ and said second data rate is 1000 Mb/s.

94. (Original) The method of claim 91 further comprising decoding said third data stream at said third data rate and for outputting said second data stream at said second data rate.

95. (Original) The method of claim 94 further comprising selecting one of X data symbols that are received, wherein said one of said X data symbols include $(M+N)$ bits.

96. (Original) The method of claim 95 further comprising removing N of said (M+N) bits and outputting symbols with said M bits at said first data rate.

97. (Original) The method of claim 96 further comprising receiving said M bits at said first data rate.

98. (Original) The method of claim 97 wherein said first data rate is 100 Mb/s, $N = 4$, $M=4$, $X=5$ and said second data rate is 1000 Mb/s.

99. (Original) The method of claim 97 wherein said first data rate is 10 Mb/s, $N = 4$, $M=4$, $X=50$ and said second data rate is 1000 Mb/s.

100. (Original) The method of claim 97 further comprising performing mode auto detection and switching between a first serial gigabit interface mode and a second serial gigabit interface mode.

101. (Original) The method of claim 94 further comprising performing 8/10 bit encoding and decoding.

102. (Currently Amended) A method for operating a network device, comprising:

transmitting a first data stream at a first data rate that includes symbols having M bits;

converting said first data stream to a second data stream at a second data rate by:

appending N bits to said symbols in said first data stream to generate second symbols having M+N bits; and

duplicating said second symbols X times to produce said second data stream at said second data rate, wherein said second data rate is equal to a product of said first data rate and $\left(1 + \frac{N}{M}\right)X$, wherein N, M, and X are integers greater than one.

103. (Original) The method of claim 102 further comprising coding said second data stream received from said translating means to produce a third data stream at a third data rate.

104. (Original) The method of claim 103 further comprising receiving said third data stream from said first PCS means and serially transmitting said third data stream.

105. (Original) The method of claim 102 wherein said first data rate is 100 Mb/s, N = 4, M=4, X=5 and said second data rate is 1000 Mb/s.

106. (Original) The method of claim 102 wherein said first data rate is 10 Mb/s, $N = 4$, $M=4$, $X=50$ and said second data rate is 1000 Mb/s.

107. (Original) The method of claim 104 further comprising:
transmitting said third data stream from a first SERDES to a second SERDES; and
decoding said third data stream at said third data rate and outputting said second data stream at said second data rate.

108. (Original) The method of claim 107 further comprising selecting one of X data symbols that are received from said second PCS, wherein said one of said X data symbols includes $(M+N)$ bits.

109. (Original) The method of claim 108 further comprising removing N of said $(M+N)$ bits and for outputting symbols with said M bits at said first data rate.

110. (Original) The method of claim 102 wherein said first data rate is 100 Mb/s, $N = 4$, $M=4$, $X=5$ and said second data rate is 1000 Mb/s.

111. (Original) The method of claim 102 wherein said first data rate is 10 Mb/s, $N = 4$, $M=4$, $X=50$ and said second data rate is 1000 Mb/s.

112. (Original) The method of claim 103 further comprising performing mode auto detection and switching between a first serial gigabit interface mode and a second serial gigabit interface mode.

113. (Original) The method of claim 107 further comprising performing at least one of 8/10 bit encoding and decoding.

Claims 114-128 (Cancelled).

Reasons for Allowance

3. The following is an examiner's statement of reasons for allowance:

Claims 1-14, 45-58, and 89-113 are considered allowable since when reading the claims in light of the specification, none of the reference of record alone or in combination discloses or suggest the combination of limitation specified in the independent claims. As to representative claims 1-14, the prior art of record does not teach a network device includes a media access control (MAC) device that transmits a first data stream at a first data rate that includes symbols having M bits, a translator includes a data appender that appends N bits to the symbols in the first data stream to generate second symbols having M+N bits and a data duplicator duplicates the second symbols X times to produce the second data stream at the second data rate, wherein the second data rate is equal to a product of the first data rate and $(1 + N/M) \cdot X$, where N, M, and X are integers greater than one.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad A. Siddiqi whose telephone number is (571) 272-3976. The examiner can normally be reached on Monday -Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/646,601
Art Unit: 2154

Page 5 *16*

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